DEPARTMENT OF MEDICINE

CLINICAL PROFILE OF NEWLY DIAGNOSED TYPE-2 DIABETES MELLITUS PATIENTS ATTENDING THE DIABETES CLINIC OF M.L.B. MEDICAL COLLEGE, JHANSI

THESIS

FOR

DOCTOR OF MEDICINE
(GENERAL MEDICINE)

D83

BUNDELKHAND UNIVERSITY
JHANSI (U.P.)

SACHIN AGARWAL

2005

उस जगत नियन्ता जगत पालक को

जिसकी मेरे पर असीम अनुकम्पा है,

सादर समर्पित ।

CERTIFICATE

This is to certify that the work entitled ***"Clinical profile of newly diagnosed Diabetes Mellitus Type-2 patients attending the Diabetes Clinic of M.L.B. Medical College, Jhansi"*** which is being submitted as a thesis for M.D. (Medicine) Examination 2003 of Bundelkhand University, Jhansi, has been carried out by ***Dr. Sachin Agarwal*** in the Department of Medicine, M.L.B. Medical College, Jhansi.

This method described was undertaken by the candidate himself and the observations recorded have been periodically checked up. He has put in the necessary stay in the Department as per University regulations, and has fulfilled the conditions required for the submission of thesis according to University regulations.

Dated: 2/9/04

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This is to certify that the work entitled ***"Clinical profile of newly diagnosed Diabetes Mellitus Type-2 patients attending the Diabetes Clinic of M.L.B. Medical College, Jhansi"*** which is being submitted as a thesis for M.D. (Medicine) Examination 2003 of Bundelkhand University, Jhansi, has been carried out by ***Dr. Sachin Agarwal*** under my direct supervision and guidance, the techniques embodied in the thesis were undertaken by the candidate himself and the observations recorded have been checked and verified by me from time to time.

Dated: 2/9/04

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Sachin Agrawal

Sachin Agarwal

Dated: 2/9/04

CONTENTS

Introduction

Introduction

Diabetes is now seen as a heterogeneous group of disease, characterize by a state of chronic hyperglycemia resulting from a diversity of etiologies environment and genetic acting jointly.

The prevalence of disease in adults was found to be 2.4% in rural, 4 – 11.6% in urban dwellers. High frequency of impaired glucose tolerance shown by those studies ranging from 3.6 – 9.1% indicate the potential for further rise in prevalence of diabetes in coming decades. It was shown that an increase in physical activity and moderate weight loss reduced the incidence of Type – 2 Diabetes Mellitus by 50% in middle age men with IGT.

Clinical symptom of hyperglycemia includes the classical triad of polydypsia, polyuria, weight loss, fatigue, weakness, blurring vision, and frequent superficial infection. Other diagnostic presentations include drowsiness, heavy glycosuria (All those with glycosuria consider diabetes unless otherwise proved by a standard OGTT), Ketonuria and at times under these situations demonstration of an unequivocal gross cultivation of blood glucose should not only clinch the diagnosis but also warn initiation of treatment.

However, in the presence of less diagnostic symptoms e.g. a non-healing wound or ulcer, recurrent boil or styes, unexplained

vaginal itching and discharge or other recurrent bacterial infection, confirmation of the diagnosis requires the following criteria laid down by WHO.

Symptom of diabetes + RBS concentration > 1.1mmol/ > 200 mg/dl

Or

Fasting plasma glucose ≥ 7.0 mmol / L (126 mg/dl)

Or

2 hr Plasma glucose ≥ 11.1 mmol / L (200 mg/dl) during and OGTT

In the absence of unequivocal hyperglycemia and acute metabolite decomposition, these criteria should be confirmed by repeat testing on a different day.

The chronic complications of diabetes affect many organs systems and are responsible for the majority of morbidity and mortality associated with disease. Chronic complication may be divided into macrovascular, microvascular and others.

(a). Microvascular

1. Retinopathy
2. Neuropathy
3. Nephropathy

(b). Macrovascular

1. Coronary Artery Disease
2. Cerebro Vascular Disease
3. Peripheral Vascular Disease

Non-vascular complications include infection, gastrointestinal manifestations, and sexual dysfunction.

Review Of Literature

Review of Literature

Ferhand et al studied the Diabetes Mellitus Type 2 and that at the time of diagnosis nephropathy was present in 29% of the patients, neuropathy in 25.1%, Coronary Artery Disease in 21%, hypertension in 23%, stroke in 5.6%, Peripheral vascular disease in 4.8%, obesity in 16%, hypercholestrolemia in 11% and hypertriglyceridemia in 14%, retinopathy in 15%. Tzing et al in 2001 showed in a study in Taiwan that 25% newly diagnosed subjects of Type 2 Diabetes Mellitus had retinopathy and 22% had hypertension.

A study carried out in the Department of Medicine, Central Middles Hospital in London in 2001, revealed that at the time of diagnosis, quarter of patients have at least one complication. The prevalence of microvascular disease was 23.7 %, and that of macrovascular disease was 15.7%, prevalence of retinopathy was 17.5%, while nephropathy prevalence was 18.1% at the time of diagnosis.

The hypertension in diabetes study HDS-1 conducted in 1993 and concluded that 39% of newly diagnosed Type 2 Diabetes Mellitus patients were hypertensive (BP 160 > 90). These patients had a greater mean BMI than normotensive patients, such patients also showed a higher prevalence of cardiovascular events and also of microalbuminuria.

Payola K et al reported a prevalence of hypertension to be increased by 1.6 fold in newly diagnosed patients. The prevalence of Coronary Artery Disease (CAD) was found to be increased by 1.7 fold in males and 4.4 fold in females as compared with non-diabetic subjects. They also found the prevalence of proteinuria to be 19.5%. Klen R et al showed the prevalence of retinopathy to be 10.2% in a recent cross sectional study. This is likely due to a long history of undiagnosed diabetes during which retinopathy develops.

Ballard et al showed that nephropathy is often present early in the course of disease with upto 8% of newly diagnosed patients having proteinuria.

Migelalis and coworkers found that the prevalence of peripheral vascular disease in newly diagnosed Type 2 patients is 6.6%. They also found that the patients with peripheral vascular disease had low HDL cholesterol levels and higher triglycerides level. The indicators used for peripheral vascular disease were history of intermittent claudication, absent foot pulse decreased ankle brachial BP index, radiologically detectable arterial calcification of lower limb.

Mc Dowell and coworkers found that diabetic foot was present in nearly 20% of newly diagnosed patients and they had to undergo lower extremity amputation within one year of diagnosis.

Jogkkan and coworkers studied the lipid profile in newly diagnosed Type 2 Diabetes Mellitus with regard to level of cholesterol, triglycerides and non-essential fatty acids. They concluded that triglycerides and NEFA were raised significantly in newly diagnosed patients where cholesterol was not as compared to controls.

Mckuige et al in a study in England showed that truncal skinfold thickness in South Asian men were significantly greater despite similar skinfold thickness on the limbs at a comparable BMI.

Banerji et al who studied obesity in migrant Indians in USA found that the exaggerated risk of insulin resistance in Indians is very likely due to an excess total body fat in comparison to caucasians.

Strong heart study by Howard et al who found that dyslipidemia is common in females.

Aims

&

Objectives

Aims and Objectives

1. To study the clinical signs, symptoms at the time of presentation in diabetes clinic.

2. To study the investigation profile at the time of presentation.

3. Relation of physical examination e.g. BMI, Height, Weight, WHR at the time of presentation.

Material & Methods

Material and Method

The present study was conducted on subjects attending the diabetes clinic as well as the general Out Patient Department of Medicine at M.L.B. Medical College, Jhansi.

CRITERIA FOR SELECTION

Any individual who is diagnosed to be Diabetes Mellitus Type 2 first time, included in the study. Their criteria for diagnosing diabetes will be the same as laid down by the WHO.

A complete medical history should be obtained with special emphasis on diabetes relevant aspects such as weight loss, family history of diabetes and its complication, risk factors for cardio vascular disease, prior medical conditions, exercise, smoking, and ethanol use.

GENERAL EXAMINATION

(Built, nutrition, Pallor, clubbing, cyanosis, Jaundice, edema, lymphadenopathy, organomegaly).

In addition to complete physical examination, special attention should be given to

BMI

$$BMI : = \frac{Wt.\ (Kg)}{Ht.\ (m)^2}$$

The range for acceptable normal or optimal BMI for Asian population should be narrowed to 18.5 – 23 Kg/m^2 . According to WHO expert consultation on appropriate BMI for these population that took place on July –8-02' in Singapore.

In Asian population morbidity and mortality is occurring in people with lower BMI and small waist circumference. Thus, they tend to accumulate intra abdominal fat without developing generalized obesity.

	BMI	
	WHO	Asian Pacific Guidelines
Underweight	< 18.5	< 18.5
Normal	18.5 – 24.9	18.5 – 22.9
- Overweight	25 – 29.9	≥ 23
- At risk		23 – 24.9
Obesity class I	30 – 34.9	25 – 29.9
Class II obesity	35 – 39.9	≥ 30
Extreme obesity	> 40	

WAIST CIRCUMFERENCE AND WAIST HIP RATIO

The simple clinical measure is waist measurement.

The metabolic complication is more if waist circumference >102 cm in men and >88 cm in women.

The WHO recommendations for measurement of waist circumference, the standard anatomical locations are used. The WHO (1995) recommended method is as follows:

"The subject should stand with feet 25 – 30 cm apart, weight evenly distributed. Measurement is taken mid way between the inferior margin of the last rib and the crest of the ileum in a horizontal plane, the measurer should stand by the side of the subject and fit the tape snugly but not compressing soft tissue. Circumference is measured to nearest 0.1 cm".

For hip circumference the measurement is taken around the pelvis at the point of maximal protrusion of the buttock.

In Caucasian a WHR > 1 for men and WHR > 0.85 for women are used to identify those with abdominal fat accumulation.

However, waist circumference is the preferred measure of abdominal obesity compared to the WHR (WHO 1998).

Apple shaped (with more weight around the waist) faces more health risk than those with pear shaped bodies that carry more weight around hip.

HYPERTENSION

JNC VII guidelines

	Systolic BP	Diastolic BP
Normal	< 120	< 80
Pre-hypertension	120 – 139	80 – 89
Stage I Hypertension	140 – 159	90 – 99
Stage II Hypertension	> 160	> 100

SINGLE SPEED AND DOUBLE SPEED: - In ECG LAD16%, LAHB 5.5%, RBBB with or without LAHB4.2%. The LAD is the most common finding seen in NIDDM patients either symptomatic or asymptomatic.

The grade of involvement may vary from individual to individual. Routine annual ECG monitoring should be a standard investigation procedure for the patients with NIDDM.

DYSLIPIDEMIA

ATP III Classification

LDL – Cholesterol (mg / dl)	
< 100	Optimal
100 – 129	Near or above optimal
130 – 159	Borderline
159 – 190	High
> 190	Very High
Total Cholesterol (mg / dl)	
< 200	Desirable
200 – 239	Borderline High
> 240	High
HDL – Cholesterol (mg / dl)	
< 40	Low
> 60	High
Triglyceride (mg / dl)	
< 150	Normal
150 – 199	Borderline High
240 – 499	High
> 500	Very Low

RETINOPATHY

A thorough fundus examination of all patients included in the study was done. Fluorescine angiography was done in selective patients after taking proper consent.

Fluorescine Angiography

Fluorescine angiography reveals to a certain extent the anatomical integrity of the retina, the choroids, and most importantly the blood retinal barrier.

An informed consent is obtained following this. The patient's pupils are dilated with a short acting mydriatic-cycloplegic combination.

Angiography done by injecting 3 ml, 20% Fluorescine dye in anticubital vein. Prior to this we take a red free photograph and control photograph (with green and blue filter). After injecting dye in 15 – 20 seconds, dye appears into the retinal circulation and we take the photograph at every 2 seconds for initially 30 seconds, then after 1 minute and 5 minutes.

Alteration in fluorescent angiography is of two kinds Hyper and Hypofluorescence. Hyperfluorescence may be produced by the abnormal presence of the dye into a location where it is not usually seen, for example retinal neovascularization or retinal-pigmented epithelium detachment, or to a greater concentration in normal places.

Hypofluorescence may be produced by the absence of fluorescence in normally filled area for example retinal capillary ischemia, or by the transmission blockage secondary to an overlying condition for example retinal hemorrhage.

Fluorescent angiography of the macula in the presence of clinically significant macular edema is fundamental for the detection of treatable lesion.

Hypofluorescent areas may be overlapping by exudates or hemorrhages and hyperfluorescent may be due to window effect and retinal pigment epithelium or leakage from vessels, we can also delineate microaneurysm and neovascularization very correctly.

The only absolute contraindication for fluorescine angiography is a past history of allergy to compounds containing Iodine and past history of severe adverse effect following injection of fluorescine.

NEPHROPATHY

Urine examination including routine, microscopic, and for microalbuminuria.

Microalbuminuria is the stage where the patient excretes small amount (μgm) of albumin in the urine, before the usual routine urine protein estimation become positive. Thus, it helps in predicting the onset of overt proteinuria and renal failure. Normal

adult excrete a very small quantity of albumin around 10μg/min, assuming an average daily urine output of 1 – 1.5 L., this gives a concentration of < 200 mg/L, note this is the rate / minute and this is concentration / liter.

Microalbuminuria or overt nephropathy with proteinuria where usual lab estimation of urinary protein become positive, urine albumin excretion rate will be > 200 gm/minute and concentration will be > 100 mg/l.

"The intermediate value in between normal and overt proteinuria indicates microalbuminuria".

Microalbuminuria is defined as urinary albumin excretion rate 20 – 200 g/minute with a concentration of 20 – 300 mg/L, this will amount to 30 – 300 μg/day. Importance of microalbuminuria lies in that improving blood glucose control and the use of ACE inhibitors such as Captopril might reverse or even arrest the progression to overt renal failure at this stage.

Diagnosis of microalbuminuria requires excretory rate of albumin 20 – 200 μg / minute in 2 or 3 samples collected in 6 months period. Other transitory cause of albuminuria like poor metabolic control, hypertension, infection and excretion are to be excluded before diagnosing microalbuminuria. Special commercial test strips, able to detect proteinuria in the microalbuminuria range are now available. (Micral strips – test done by micral strips)

NEUROPATHY

A complete motor and sensory examination will be carried out to detect any polyneuropathy, radiculopathy, mononeuropathy (examination done by monofilament).

CARDIOVASCULAR DISEASE: - For assessment

Single and Double speed ECG.

Echo.

TMT (If required).

Cerebro vascular disease : A detailed history to rule out episodes of stroke or conversely to detect diabetes in patient presenting with stroke.

PERIPHERAL VASCULAR DISEASE: -

Ankle : Brachial BP Index is ratio of systolic pressure at the ankle to that in the arm.

The resting ABPI is normally about 1. Value below 0.9 indicates some degree of arterial obstruction, a value less than 0.3 suggest eminent necrosis.

ABPI = Normal 1.

ABPI < 0.9 – Arterial obstruction

ABPI < 0.3 – Eminent necrosis

A femoral or popliteal and color Doppler, if required and other physical signs according to the clinical condition of the patient.

Instead of other routine investigations like Hb, TLC, DLC, ESR, urine, B.urea, S.Bilirubin, S.Creatinine.

Glycated HbAIC – HbAIC reflects average glycemic control over the period of 2 – 3 months.

HbAIC assay by HPLC (High Performance Liquid Chromatography) method is standard reference method. Hemoglobinopathies, hemolytic anemia and uremia may interfere with HbAIC results.

When measured by HPLC the HbAIC approximates the following mean plasma glucose value

An HbAIC of 6% is 6.6% mmol/L (120 mg/dl)
An HbAIC of 7% is 8.3% mmol/L (150 mg/dl)
An HbAIC of 8% is 10.0% mmol/L (180 mg/dl)

A 1% rise in HbAIC translates into 1.7 mmol i.e. 30 mg/dl.

Working Proforma

Name Occupation

Address Age/Sex

Chief complaints

Family history

Gen Examination

Weight

Height

BMI

Waist Circumference

Heart Rate (Resting)

Blood Pressure (Resting)

Ankle BP

ECG (Single speed)

(Double speed)

X-ray chest (PA view)

Lipid profile- Cholesterol

Tri-glycerides

VLDL

HDL

LDL

Nephropathy

- Microalbuminuria
- Serum Creatinine
- Urine (RM)

Neuropathy CNS Examination

Ankle jerk

Touch sensation by fiber

Retinopathy Fundus examination

Fluorescine Angiography

Peripheral Vascular Disease (All pulse to be palpated)

(Carotid Doppler if patient is willing)

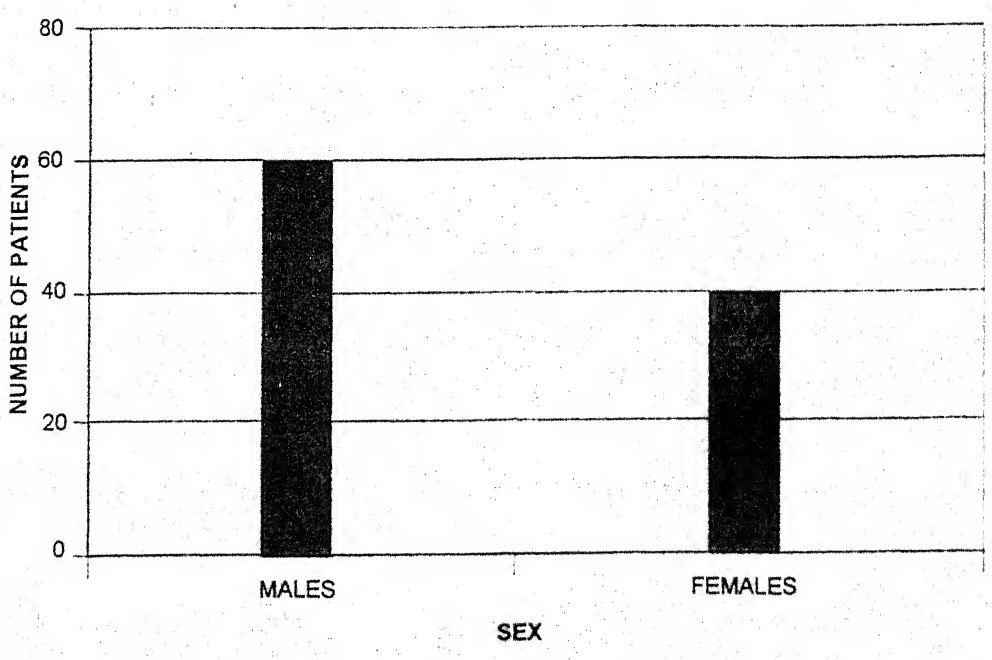
Observations

Observations

The present study was conducted in the Department of Medicine M.L.B. Medical College, Jhansi from November 2003 to April 2004. The subjects were taken from the Diabetes Out Patient Department, Medicine OPD and wards. The present study includes 100 patients.

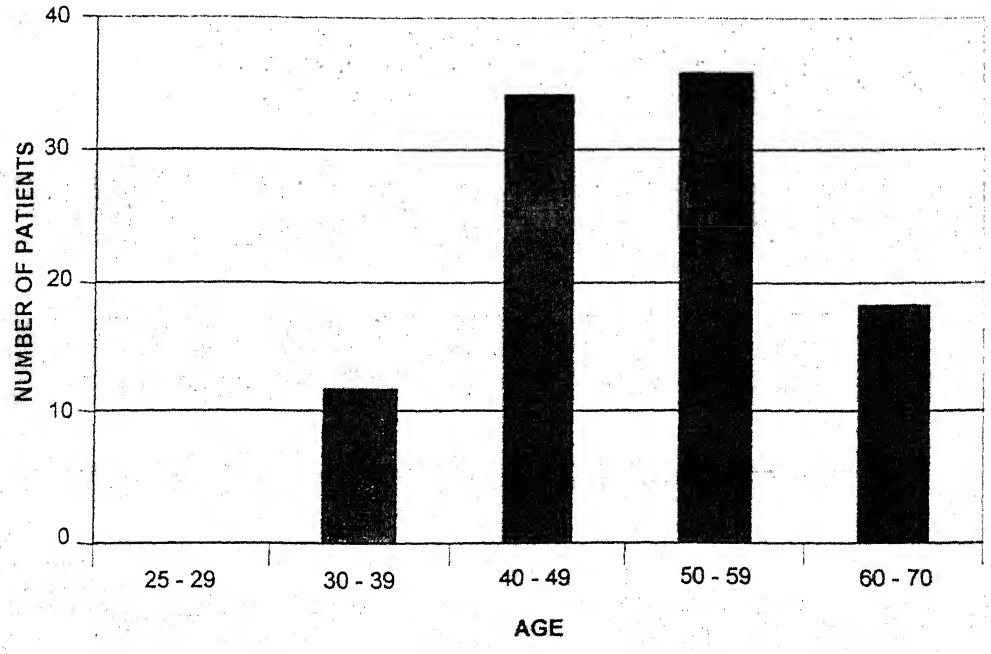
I Table showing distribution of patients according to sex

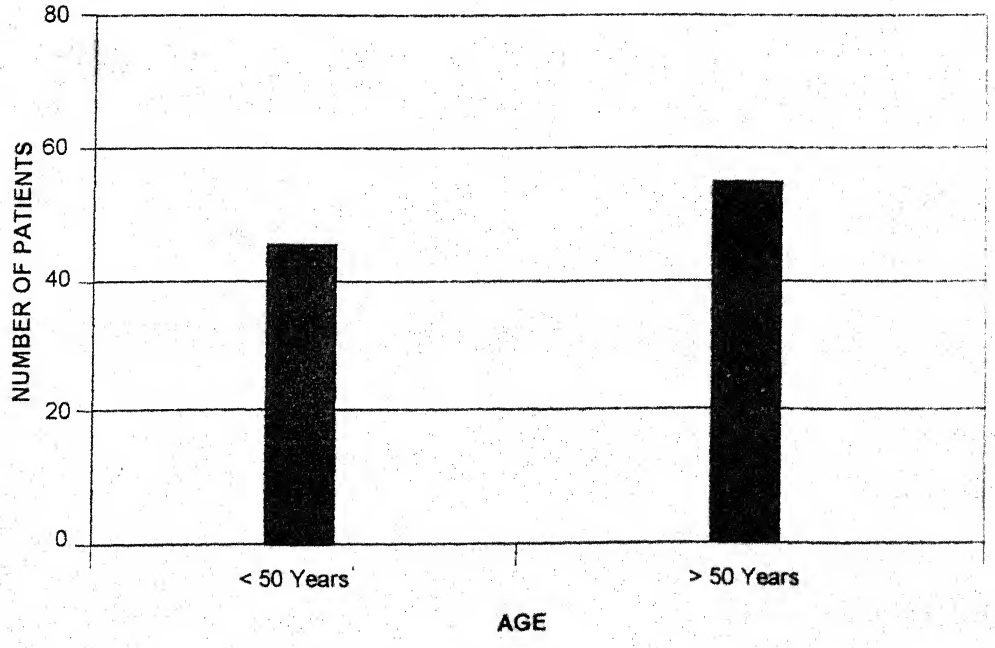
	No	%
Males	60	60
Females	40	40



II Table showing distribution of patients according to their age at the time of presentation

	No	%
25-29	Nil	Nil
30-39	12	12
40-49	34	34
50-59	36	36
60-70	18	18





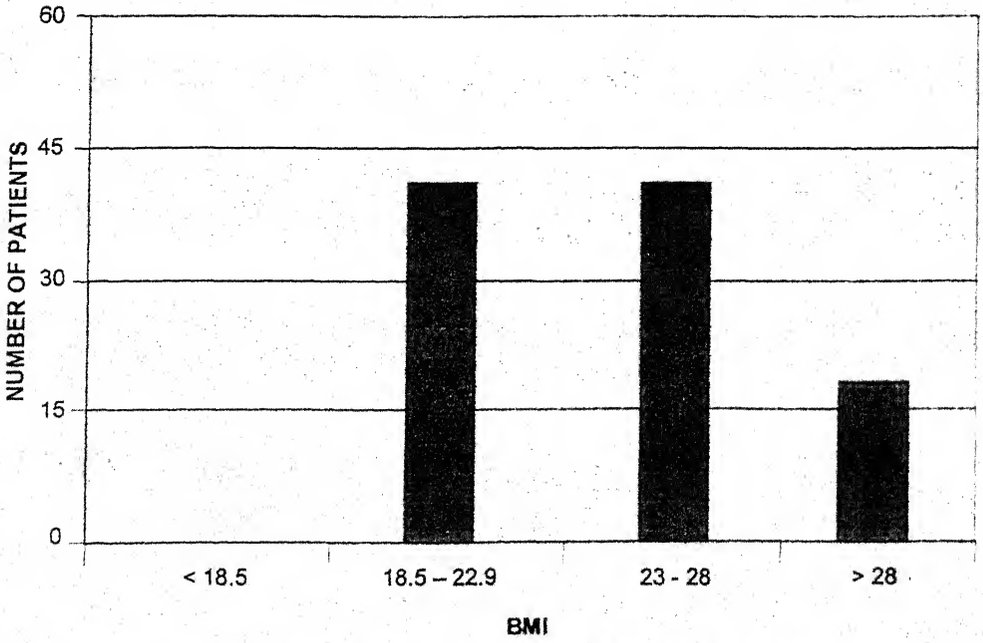
III Table showing distribution of patients according to BMI

(According to WHO guidelines)

	No	**%**
<18.5	Case not studied	
18.5- 24.9	58	58
25.0-29.9	31	31
≥30	11	11

(According to Asia Pacific guidelines)

	No	**%**
<18.5	Case not studied	
18.5- 22.9	41	41
23.0-28	41	41
≥28	18	18



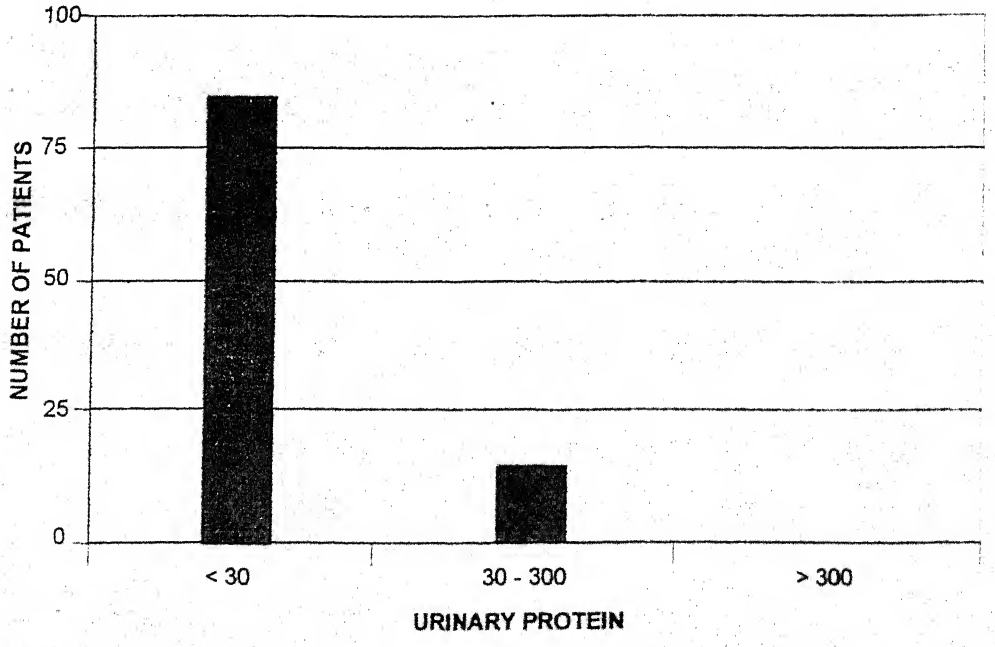
BMI ASIA PACIFIC GUIDELINES

IV Table showing presence of family history in patients

	No.	%
Both Father and Mother	2	2
Father only	9	9
Mother only	6	6
Siblings	3	3

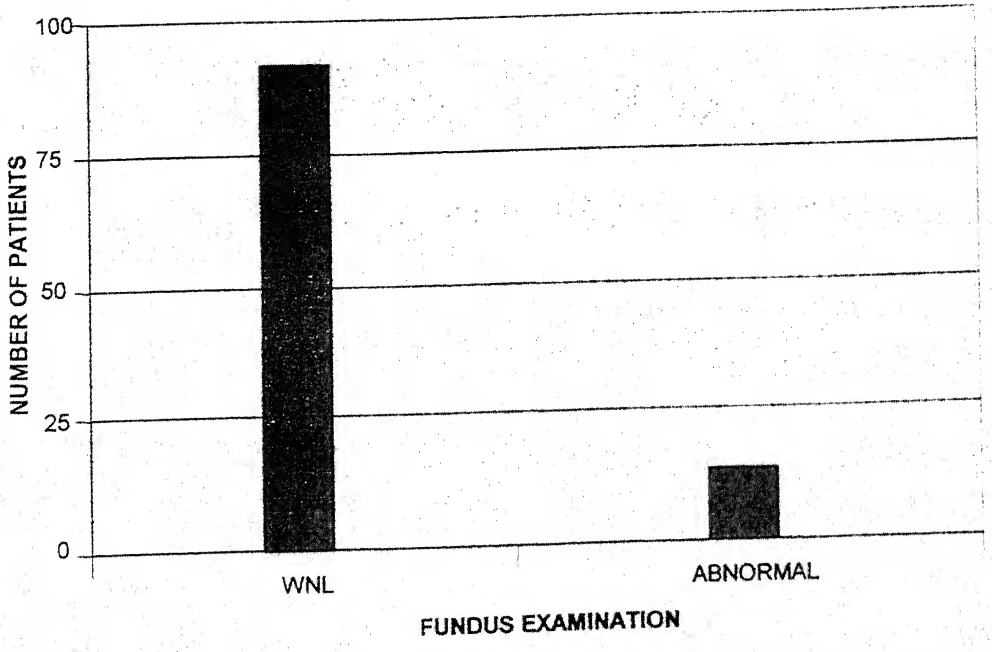
V Table showing 24 hours urinary protein (By Micral strip)

	No.	%
< 30	85	85
30 – 300	15	15
> 300	Nil	Nil



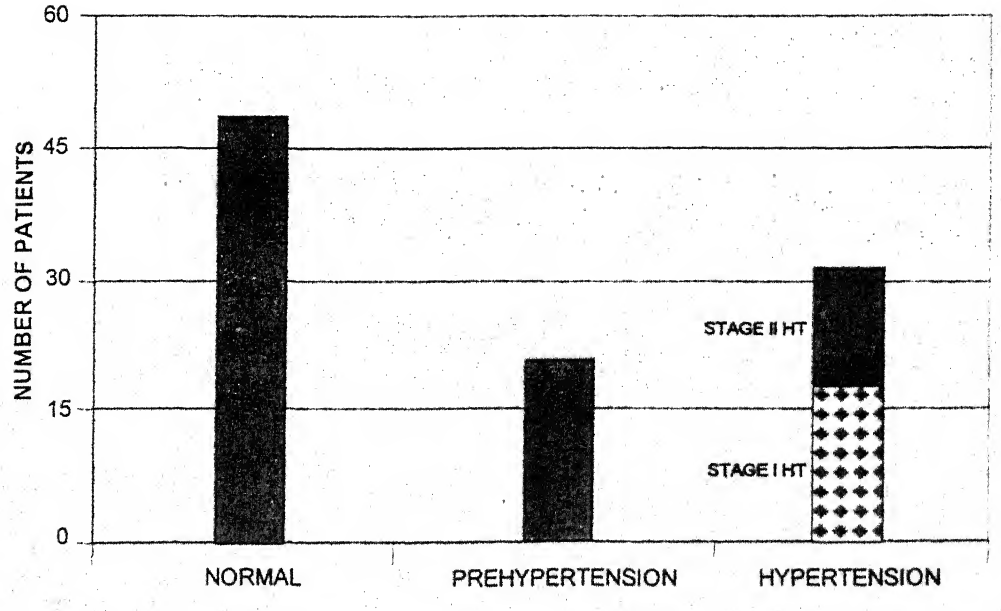
VI Table according to Fundus (Retinopathy)

	No.	%
WNL	88	88
Abnormal	12	12
→ Hemorrhages		
→ Macular edema		
→ Exudates		
→ Microaneurysms		



VII Table showing distribution of patients according to their blood pressure as per JNC VII

	No	%
Normal	48	48
Prehypertension	21	21
Stage I hypertension	18	18
Stage II hypertension	13	13



VIII Table showing the clinical symptoms at the time of presentation

	No	%
Classical (Polydypsia, Polyuria, Polyphagia)	76	
Incidentally diagnosed	6	
Infections	20	
Tingling and Numbness	15	
Headache, Vertigo, Heaviness in eyes	12	
Monofilament test	Negative in all patients.	

No diabetic foot. (This is an unusual finding, and can be explained by the fact that most of the diabetes patients coming to diabetes clinic are city dwellers, who have access to better medical facility and come early.)

IX Table showing distribution of patients according to their Ankle Brachial Blood Pressure Index

	No	%
0.9	6	6
1 or > 1	94	94

X Table showing distribution of patients according to their Waist Circumference

	No
> 85 cms	21 Females
> 102 cms	12 Males

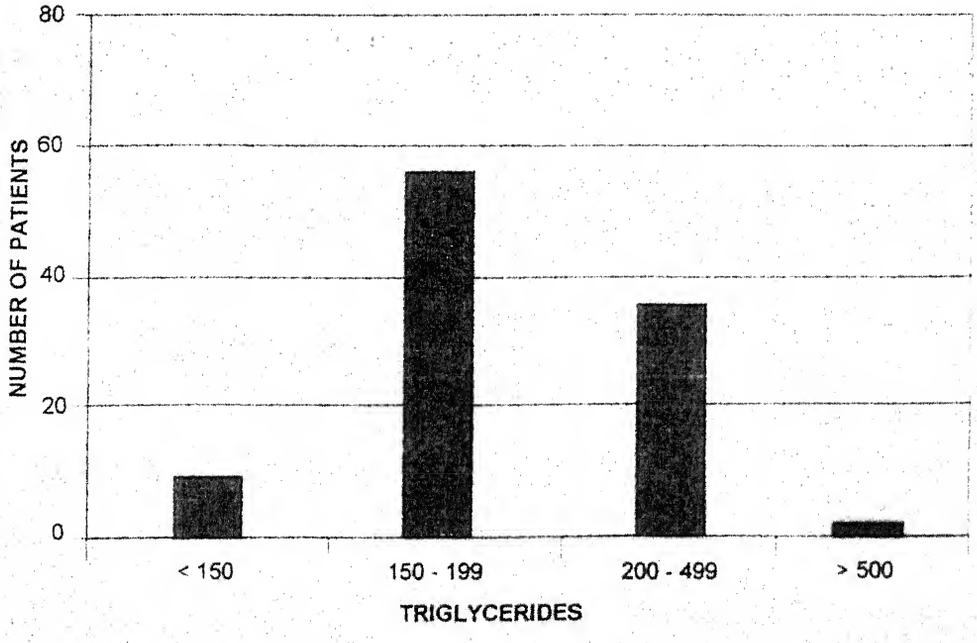
Unfortunately we have not done Lipid profile in all patients studied, it is done only in 64 patients.

XI Table showing distribution of patients according to their HDL cholesterol levels (in mg%)

Males	**No**	**%**
<40	18	47.5
>40	20	52.5
Females	**No**	**%**
<50	22	88
>50	3	12

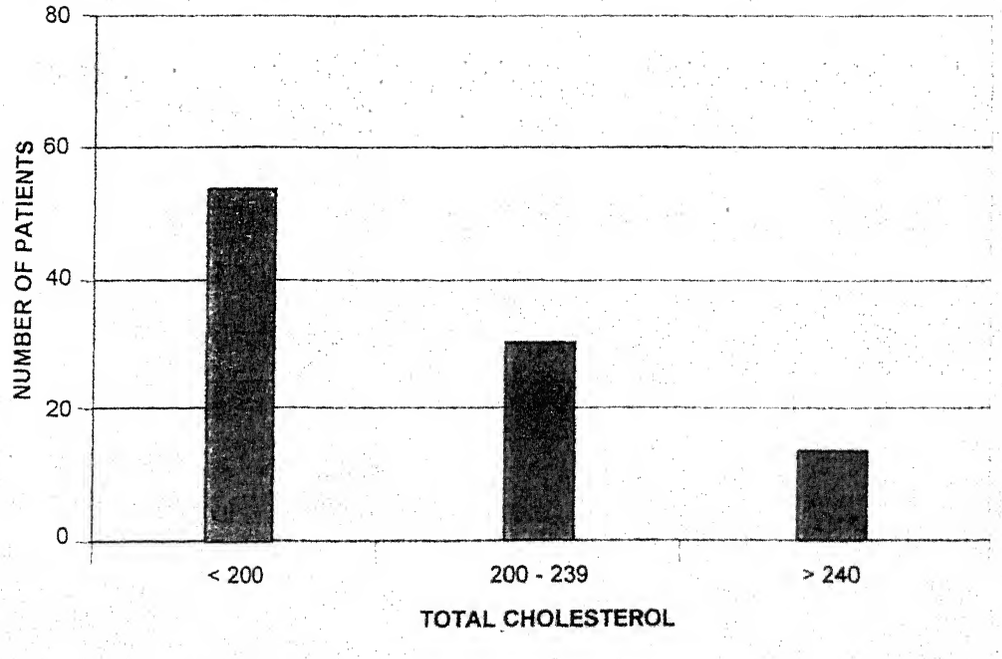
XII Table showing distribution of patients according to their Triglyceride levels (in mg%)

	No	**%**
<150 (Normal)	5	7.93
150-199 (Borderline High)	36	57.15
200-499 (High)	23	36.52
>500 (Very High)	1	1.59



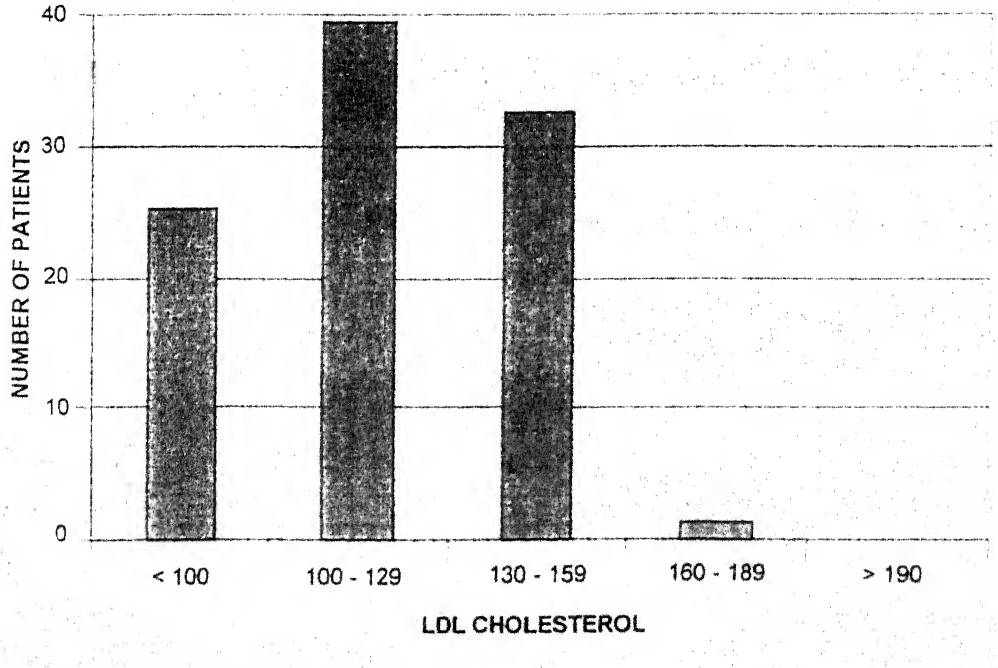
XIII Total Cholesterol (mg/dl)

	No	%
< 200 (Desirable)	34	54
200-239 (Borderline High)	19	30.15
> 240 (High)	10	15.9



XIV Table showing distribution of patients according to their LDL cholesterol levels (in mg/dl)

	No	%
<100 (Optimal)	16	25.9
100-129 (Near or above optimal)	25	39.68
130-159 (Borderline)	21	33.33
160-189 (High)	1	1.59
>190 (Very High)	0	0



Discussion

Discussion

The present study was conducted in the Department of Medicine, M.L.B. Medical College, Jhansi and conducted from November 2003 to April 2004. The subjects were taken from the diabetes OPD, General Medicine OPD and wards.

This study included 100 patients detected within 6 months. Of the 100 patients studied 60 were males and 40 were females, maximum number of patients were in 40 – 59 years age group.

If we consider the clinical presentation at the time of diagnosis, nearly 76% has classical symptoms like polydypsia, polyuria and weight loss. This compared with UKPDS where nearly 60 – 65% patients were with classical symptoms.

About 20% patients had symptoms of infection e.g. burning during micturation, vaginal itching, Balanoprosthitis. Nearly 15% patients had features of neuropathy in the form of tingling and numbness. This compares with UKPDS where 20 – 25% patients presented with symptoms of parasthesia. But our findings are in contrast to Singh et al who reported a prevalence of 47% of neuropathy in newly diagnosed patients.

Approximately 12% patients presented with vague symptoms like vertigo, headache, heaviness in eyes. Nearly 6% patients were

incidentally diagnosed while coming for other symptoms of cataract operation, posted for other operations. This finding is somewhat similar to that observed in Third National Health And Nutrition Examination Survey (NHANES) where 6.7% of the patients were found to be diabetic on routine detection. This is an unusual finding, and can be explained by the fact that most of the diabetes patients coming to diabetes clinic are city dwellers, who have access to better medical facility and come early.)

Of all these patients, 4 patients had Pulmonary Tuberculosis at the time of diagnosis. Various workers have reported the prevalence of Tuberculosis from 0.5 – 15%.

A positive family history was found in 20% patients.

If we look at the BMI of the cases studied (According to WHO guidelines) 58% in normal range, 31 cases are overweight and 11 patients were obese.

The cases of BMI below 18.5 are not included in the study.

These findings are in consent with the observations of various workers notably Mckeiuge et al in England and Banerji et al, that Indians are at an exaggerated risk of insulin resistance due to excess body fat composition and by the fact they are centrally obese as judged by their waist circumference. Fernando et al found obesity in nearly 16% of patients.

According to Asia Pacific guidelines in which 41 patients are normal, 41 are over weight and 18 are obese. This finding compares with Fernando et al.

Waist circumference were > 85 cms in 21 females and more than 102 cms in 12 males.

The urinary protein was < 30 mg/l in 85% patients between 30 – 300 mg% i.e. microalbuminuria in 15% patients. This comprises with Brookmoyer et al, who found the prevalence of nephropathy to be 8 – 18%.

The distribution of Blood Pressure in 100 patients according to JNC VII guidelines showed that 48% had normal BP, 21 were prehypertensive and 31 were hypertensive. This finding is near to UKPDS, which reported a prevalence of 39% in newly diagnosed patients. Fernando et al found hypertension in 23% patients.

The Ankle Brachial Blood Pressure Index was 1 or greater than 1 in 94 patients and in between 0.9 to 1 in 6 patients.

Out of 100 patients 88 showed the normal fundus on examination and 12 patients had some abnormality detected in the form of macular edema, exudates, hemorrhages and cotton wool spots.

We have done Fluorescine angiography in 20 patients out of which 4 had macular edema and vascular leak. Neovascularization was not seen in any case.

These findings are close to UKPDS, which reported 82% normal fundus and 18% patients had retinopathy at the time of diagnosis. None of the patient was found to have proliferative retinopathy changes.

When we look at the lipid profile of the patients, 54% of the patients had total cholesterol in desirable range i.e. < 200 mg/dl, 30% had borderline high cholesterol and 16% had high cholesterol.

LDL cholesterol was optimal in 26%, above optimal in 40%, 34% had high LDL cholesterol.

Nearly 93% patients had borderline high and high triglyceride level.

HDL level was < 40 mg% in 48% and > 40 mg% in 52% males, while HDL was < 50 mg % in 88% females and > 50 mg% in 12% females. This comprises with Strong heart study by Howard et al, who found that dyslipidemia in women tends to be more common than men.

Conclusion

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Summary

Summary and Conclusion

In our study we conclude that

1. Most common age group 40 to 59 years.

2. According to Asia Pacific guidelines 41% are overweight and 18% are obese, so there is definite relation with over weight and obesity.

3. Family history positive in 20% patients.

4. Microalbuminuria in 15% patients

5. Retinopathy is 12%

6. 31% patients are hypertensive and 21% are prehypertensive.

7. 76% have classical symptoms, 20% have some infection and 15% neuropathy and 12% vague symptoms.

8. Dyslipidemia is more common in females.

Bibliography

Bibliography

1. Redefining obesity and its Treatment, Feb 2000 Prof. S. inoue Japan. Prof. P. Zimmet Australia Prof. Caterson Australia, Prof. Chenchunmy, China Prof. Y Likid Japan, Dr. A.K.Khalid Malasia.
2. WHO reassess appropriate BMI for Asian population, author Choo V. The Lancet Jul 2002; 20: 360, 9328 1235.
3. Wrang J, Thormon JC, American Journal of Nutrition, July 1994; 60:238.
4. P Dileep Kumar, K Rajranm, JIMA volume 95, No. 7, July 1997, pp 427.
5. PanX, LiG HuY, WangJ Yang W. The Daparg IGT and Diabetes study. Diabetes care 20: 537 – 544, 1997.
6. World Health Organization Prevalence statistics.
7. Brookmeyer R, Day NE Moss S -Case control studies for estimation of the natural history of preclinical disease from screening data Stat Med 5:127-38
8. UKPDS 6 – Complications in newly diagnosed type 2 patients Diabetes Res. 1998 Jan. 13(1) 1-11.
9. Fernando DJ, Weerasuriya N, Dissanakye : Long term complications in newly diagnosed Sri Lankan patients with type-II diabetes patients QJM 1998 June 91(6) 439-43.
10. Tzeng TF, Hsiao PJ, Shin SJ: Association of nephropathy and retinopathy, blood pressure age in newly diagnosed type-II

diabetes Kaohsiung Journal of Medical Science 2001 June 17(6) 294-301.

11. Cassamo PA, Rosner B- Obesity and body fat distribution in relation to the development of type 2 diabetes.
12. Shin SJ Hsiao PJ: association of nephropathy, retinopathy, blood pressure and age in newly diagnosed type 2 diabetes mellitus: Kaohsiung J Med Sci. 2001 June 17(6) 294-301
13. Chowdhury TA, SLasher SS: complications and cardiovascular risk factors in South-Asians and Europeans with early onset type 2 diabetes QJM 2002 Apr 95(4) 241-6.
14. Ohlson L, Larsen B- The influence of body fat distribution on the incidence of diabetes mellitus.
15. Krahulec B, Vozar J- Incidence of risk factors and vascular complications in patients with newly diagnosed type 2 diabetes; Vnitr Lek 2002 Nov 48(11) 1031-8.
16. Bannerji MA, Faridi N- Body composition, visceral fat, leptin and insulin resistance in Asian Indian men J Clin Endocrinol Metab 1999 84; 137-144.
17. Spijkerman AM, Decker JM Microvascular complications at the time of diagnosis of type 2 patients Diabetes Care 2003 Sep. 26(9) 2604-8.
18. Hypertension in diabetes study HDS-I: Prevalence of hypertension in newly presenting type-II diabetes patients and the association with risk factors for cardiovascular disease. Journal of hypertension 1993 March 11(3) 309-17.
19. Pyorala K Uusitupa M, Sitonen O: Prevalence of CAD & hypertension in middle aged newly diagnosed type-II diabetic patients. Diabetologia 1985 Jan 28(1) 22-7.

20. Ruigomez A, Garcia LA- Presence of diabetes related complications at the time of diagnosis. Eur J of Epidemiology 1998 July 14(5) 439-45.

21. Andreasen AH, Neilsen NV- Diabetic retinopathy in newly diagnosed middle aged and elderly diabetic patients Graefes Arch Clin Exp Opthalmol 2001 Sep. 239(9) 664-72.

22. Tallu S, Kaucsai E- Diabetic retinopathy in newly diagnosed patients with type 2 diabetes Oftalmologia 2002 54(3) 27-30.

23. Klein R, Klein BEK et al: Retinopathy in adults with newly diagnosed diabetes mellitus. Ophthalmology 1992: 99; 58-62.

24. Migdalis IN, Kourth A, Samartzis M: Peripheral vascular disease in newly diagnosed type-II diabetes patients. Int Angiol 1992; Jul-Sep 11(3); 230-2.

25. McDowell D, Burns E, Young RJ: Problem of amputations in patients with newly diagnosed type-II diabetes patients. Diabetes Med 1998; Sep 15(9); 760-64.

26. Joglekar CU, Bhat DS, Raut KN: Circulating lipids and cardiovascular risk in newly diagnosed type-II diabetes. Diabetes Med 1997 Sep 14(9); 757-61.

27. McDaid EA, Monagham B, Allen JA: Peripheral autonomic impairment in patients with newly diagnosed type-II diabetes. Diabetes care 1994; Dec 17(12); 1545-6.

28. Kaucsar E, Talu S- Diabetic retinopathy in newly diagnosed patients with type 2 diabetes So Oftalmologia 54(3) 27-30, 2002.

29. Unuigbe EL, Omeife H- Microalbuminuria in newly diagnosed patients Nigerian Post Graduate Medical Journal 8(4) 187-92 Dec. 2001.

30. Frost D, Frohlich B- Sub-clinical arteriosclerosis in patients with newly diagnosed type 2 diabetes Deutsche Medizinische Wochenschrift 125(21) 648-54 May 2000.

31. Kumar Rakesh, Singh SK- A study of prevalence of complications in newly detected diabetic patients JAPI Dec. 2003

32. Mckeigue PM, Shah B- Relation of central obesity and insulin resistance with high diabetes prevalence and cardiovascular risk in South Asians Lancet 1991 337; 971-73.

33. Patel MS- Bacterial infections among patients with diabetes in Papua New Guinea Med J Aust 1989 150:25-28

34. Howard BV, Cowan LD- Adverse effects of diabetes on multiple cardiovascular disease risk factors in women: the strong heart study Diabetes Care 1998 21;1258-65

35. Ruige JB Kostense PJ- Performance of an NIDDM screening questionnaire based on symptoms and risk factors. Diabetes Care1997 20:491-6

36. American Diabetes Association Management of dyslipidemia in adults with diabetes Care 2001 24; 558-61.